REMARKS

In accordance with the foregoing, claims **1**, **12-18**, **21, 24** and **25** have been amended, claims **9** and **20** have been canceled and claim **26** has been added. No new matter has been added. Claims 1-8, 10-19 and 21-26 are pending and under consideration.

ITEM 1: REJECTION OF CLAIMS 9 AND 20 UNDER 35 U.S.C. 112, FIRST PARAGRAPH AS FAILING TO COMPLY WITH THE WRITTEN DESCRIPTION REQUIREMENT.

The Examiner asserts that the claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The Applicants cancel the rejected claims 9 and 20 accordingly. Therefore, the rejection under 35 USC 112, first paragraph should be withdrawn.

ITEM 2: REJECTION OF CLAIMS 1-3, 5, 7, 9-14, 16, 18 AND 20-22 UNDER 35 U.S.C. 102(b) AS BEING ANTICIPATED BY KOBAYASHI ET AL. (INT. J. BIOL. MACROMOL. 1995, 17(6), 373-79).

Independent claims **1** and **12** have been amended to recite that **the non-reducing sugar residue is selected from the group consisting of tetrose, pentose, fructose, glucose, galactose and mannose**. New independent claim 26 is directed to a process for making a β-glucan derivative.

Antecedent basis for the above amendment can be found at page 14, lines 14-21, paragraph [0003] (page 3 lines 3-26), paragraph [0013] (page 13, line 28 to page 15, line 23), the examples and Fig. 1 of the specification.

The Examiner asserts that **Kobayashi et al** teach a beta glucan oligosaccharide wherein four glucose residues are chemically attached to the fifth sugar unit, a non-reducing sugar, via an ether bond.

However, **Kobayashi et al** discloses derivatives wherein the non-reducing sugar is a hexose having a terminal OMe at a C-1 position. On the other hand, the amended independent claims **1** and **12** do not include such a hexose. Therefore, claims 1 and 12 and the claims dependent thereon are not anticipated by **Kobayashi et al**.

Furthermore, new claim **26** is novel over **Kobayashi et al**. In the process of claim **26**, the reaction site of the enzyme is the C-1 position of the β-glucan having three or more glucose residues. This is illustrated below. The β-glucan having three or more glucose residues is highlighted in bold.

(C-4 position) **(Glc)-(Glc)-(Glc)-OH** (C-1 position)
↑
non-reducing sugar (Addition by enzyme)

However, in scheme 4 of **Kobayashi et al.**, the reaction site of the enzyme is the C-4 position of the β-glucan having three or more glucose residues. This is illustrated below.

(C-4 position) **(Glc)-(Glc)-(Glc)OMe** (C-1 position) (β-glucan having three or more glucose residues)
↑ (Addition by enzyme)
(C-4 position) **(Glc)-(Glc)-F** (C-1 position) (β-glucan)

The reaction of **Kobayashi et al.** corresponds to a case of "when a sugar chain is added by transglucosylation mediated by a transferase or a hydrolase, in most cases, the transglucosylation proceeds from a non-reducing end" as described in paragraph [0003] (page 3, lines 20 to 23) of the specification.

Therefore, new claim 26 is novel over **Kobayashi et al**.

ITEM 3: REJECTION OF CLAIMS 4, 6, 8, 15, 17, 19 AND 23-25 UNDER 35 U.S.C. 103(a) AS BEING UNPATENTABLE OVER KOBAYASHI ET AL. (INT. J. BIOL. MACROMOL. 1995, 17(6), 373-79) IN VIEW OF KOKI ET AL. (EP 0470331).

The Examiner asserts that **Kobayashi et al** teaches the transfer of a non-reducing sugar to an oligosaccharide having beta-glucan residues via the action of an enzyme. The Examiner also asserts that **Koki et al**, drawn to fructose containing oligosaccharides, teach the use of beta-fructofuranosidase enzyme for the transfer of the fructosyl group to mono and oligosaccharides. The enzyme can be used to transfer the fructosyl group to various kinds of mono- and oligosaccarides in the presence of sucrose.

Please note that **Koki et al** (EP 0470331) corresponds to JP 4-91795 A described in paragraph [0005] (page 4, line 16 to page 5, line 7) of the specification.

Koki et al discloses a process for preparation of a fructose-containing oligosaccharide comprising reacting an enzyme (ß-fructofuranosidase) on a saccharide in the presence of aldose or ketose. However, as an example of ß-glucan, **Koki et al** only describes a product

produced from cellobiose having two glucose residues as a substrate. **Koki et al** does not describe the usefulness of a product in which a fructose is bound to ß-glucan having three or more glucose residues. For example, **Koki et al** does not describe the usefulness of a product wherein fructose is bound to the reducing end of a micro crystalline cellulose and a cellulose powder. More specifically, **Koki et al** does not recognize the utility of making a preparation using an active ingredient (which has not yet been able to be used) having an amino group, by inactivating a reaction with the active ingredient while maintaining the inherent nature such as moldability and disintegrability. See page 4, line 16—page 5, line 4. To the contrary, these applications are taught by the present application. In addition, the ß-glucan having three or more glucose residues in the present application is not aldose or ketose.

Aldose is a monosaccharide (a simple sugar) containing one aldehyde group per molecule at a terminal of the chain and having a chemical formula of the form $C_n(H_2O)_n(n=3)$. On the other hand, Ketose is a monosaccharide containing one keto group (ketotic carbonyl group) per molecule within the chain structure. The monosaccharide is the simplest form of sugar and cannot be hydrolyzed any more.

The ß-glucan having three or more glucose residues is depolymerized into glucoses which are the monosaccharide. Therefore, the present invention is different from the invention of **Koki et al** because the ß-glucan having three or more glucose residues is not the monosaccharide, while aldose and ketose in **Koki et al** are the monosaccharide.

Examples of **Koki et al** disclose the following fructose-containing oligosaccharide. As shown in Tale 1 below, there is no disclosure of the ß-glucan having three or more glucose residues **Koki et al**.

Table 1

Example # (**Koki et al.**)	Product	Composition
1	xylsucrose having a fructosyl group bonded to the xylose through a ß-2,1-linkage	xylose + fructosyl group
2	lactosucrose having a fructosyl group bonded to the glucose portion of lactose at the 1-position through a ß-2,1-linkage	lactose + fructosyl group
4	galsucrose having a fructosyl group bonded to the galactose through a ß-2,1-linkage	galactose + fructosyl group

5	isomaltosucrose having a fructosyl group bonded to isomaltose through a ß-2,1-linkage	isomaltose + fructosyl group
6	maltosyl fructoside having a fructosyl group bounded to maltose through a ß-2,1-linkage	maltose + fructosyl group

Although **Koki et al.** describe ß-fructofuranosidase, the reference does not describe or suggest using ß-fructofuranosidase for a ß-glucan having three or more glucose residues.

As mentioned above, the reaction of **Kobayashi et al.** bonds the C-1 position of glucose to the C-4 position of the ß-glucan having three or more glucose residues by cellulose as a catalyst.

On the other hand, the reaction of **Koki et al.** bonds the C-2 position of fructose to the C-1 position of glucose by ß-fructofuranosidase.

Therefore, one of ordinary skill in the art would not have been motivated to combine the teachings of **Kobayashi et al** with the teachings of **Koki et al**. since there is a distinct difference between the reaction mechanism of **Kobayashi et al.** and that of **Koki et al**.

Furthermore, **Kobayashi et al.** and **Koki et al.** neither describe nor suggest the usefulness of such ß-glucan derivatives. Althgouh the claims are not so restricted, it is the inventors who recognized that a ß-glucan could be used with an active ingredient having an amino group (which combination was not heretofore possible), if a reaction between the ß-glucan and the active ingredient is deactivated. They found that deactivation was possible with the ß-glucan derivative. They also found that the inherent good qualities, such as moldability and disintegrability, could be maintained.

In addition, claims **4**, **6**, **8** depend on allowable independent claim **1**, and claims **15**, **17**, **19** and **23-25** depend on allowable independent claim **12**.

Accordingly, an obviousness rejection can not be based on **Kobayashi et al.** in view of **Koki et al.** and allowance of claims **4**, **6**, **8**, **15**, **17**, **19** and **23-25** is respectfully requested.

CONCLUSION

Thus, it is believed that all rejections and objections have been removed, and the present application is now in condition for allowance.

Reconsideration and early favorable action on the claims are earnestly solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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